HIGH OCCUPANCY VEHICLE (HOV) OCCUPANCY DETECTION SYSTEM TESTING

Project #: **RES2016-05**

PURPOSE OF THE PROJECT

This project is a collaboration between Dr. Deo Chimba, P.E. of TSU as the Principal Investigator (PI) and Dr. Janey Camp, P.E. of Vanderbilt University as the Co-PI to research occupancy detection technologies to assist in monitoring Tennessee's HOV system and evaluating the performance of strategies to address high violation rates. This collaborative study supports TDOT's request for study due to the high volume of traffic on freeways, TDOT is implementing High Occupancy Vehicle (HOV) lanes as a travel time incentive aimed at promoting carpooling. While the overall person-moving capacity of the HOV lane may be slightly higher than the general-purpose lanes, the travel–time incentives for legitimate users have been severely diminished by violators in Tennessee.

SCOPE AND SIGNIFICANCE OF THE PROJECT

The project evaluates instrumentation, operation, maintenance and field performances and the capability of occupancy detection technologies or of potential use to TDOT to determine the occupant numbers inside a vehicle. The study also perform a survey to gather public input on potential use of HOV detection systems, enforcement, possible interest and pricing considerations for HOT lanes. The significance and benefits of this project to TDOT include:

- Support the fulfillment of TDOT operational goals of HOV system by providing a performance monitoring system for evaluating improvement strategies.
- Evaluate appropriate enforcement mechanisms that is expected to minimize high violation rates on HOV facilities, which is of significant importance to ensure that the travel time incentive is devoted to legitimate users.
- Assist TDOT by laying the groundwork to determine if occupancy detection technologies can provide an automated solution for HOV system monitoring.

EXPECTED OUTCOMES

The following outcomes are expected:

- Comprehensive literature review on the use of HOV occupancy detection systems from other states or countries.
- Review on the state-of-the-art occupancy detection technologies that can assist TDOT in monitoring Tennessee's HOV system and evaluating the performance of strategies to address high violation rates and provide recommendations for the most appropriate technology for TDOT to employ.
- Determined vehicle occupancy rates and evaluate the accuracy of occupancy detection technologies in Tennessee
- The study findings will support the TDOT Operational Goal of operating and managing Tennessee's transportation system by:
    - Improving mobility by increasing the person-moving capacity of the roadway.
    - Improving roadway operation efficiency and reliability.
    - Promoting transit and ride-sharing.
    - Providing travel options to meet user needs, such as "time-sensitive" travel.
    - Improving air quality through potentially increased and incentivized carpooling.

TIME PERIOD
The project period is 30 months starting 10/1/2015 to 3/31/2018.

CONTACT INFORMATION

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